



Featured Operative Technique

Simultaneous Mastopexy Explantation With a Vertical Bipedicle and Novel Open Pattern Marking Technique

Elliot M. Hirsch, MD

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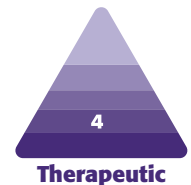
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Abstract

There are limited studies in the plastic surgery literature that detail technical considerations in simultaneous breast implant removal and mastopexy procedures. These procedures are difficult, with significant potential for complications and poor cosmesis. The current plastic surgery literature describes a limited number of techniques that address these concerns, virtually all of which are variants of superior or superior medial pedicle vertical pattern mastopexy. This paper details a safe technique for simultaneous explantation and mastopexy with a novel open marking pattern and vertical bipedicle, which can restore breast cosmesis following implant removal. The study will briefly retrospectively review the results of a consecutive series of 86 patients who underwent this procedure from November 2018 to November 2019, with no incidence of partial or total nipple-areola complex necrosis. Thus, the technique is safe and allows the flexibility for intraoperative adjustments that are necessary for these procedures. A future study will conduct a more in-depth analysis of the results.

Level of Evidence: 4

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Simultaneous breast implant removal and mastopexy is an inherently complex operation that has a high potential for complications. Patients often have had multiple previous breast procedures including both augmentations and mastopexies, which can disrupt the blood supply to the nipple-areola complex. Performing a superior pedicle mastopexy in a patient who had a previous inferior pedicle mastopexy places the viability of the nipple-areola complex at risk for necrosis as does performing an inferior pedicle mastopexy with the history of a previous superior pedicle mastopexy. Patients typically do not have access to previous operative details, and, as such, it can be difficult to safely plan the mastopexy. Additionally, the breast envelope changes significantly once the breast implant is removed. Any marking or surgical procedure must allow

for intraoperative adjustments so that results can be optimized. The current plastic surgery literature describes a limited number of techniques that address these concerns, virtually all of which are variants of superior or superior medial pedicle vertical pattern mastopexy¹⁻⁶ or are invasive and not generalizable to common practice.⁷ Thus, a new type of mastopexy is needed to reliably perform this

Dr Hirsch is a chief, Division of Plastic Surgery, Providence Ceders-Sinai Tarzana Medical Center, Los Angeles, CA, USA.

Corresponding Author:

Dr Elliot M. Hirsch, 4955 Van Nuys Blvd, Suite 715, Sherman Oaks, Los Angeles, CA 91403, USA.

E-mail: drhirsch@hirschplasticsurgery.com;

Instagram: @hirschplasticsurgery

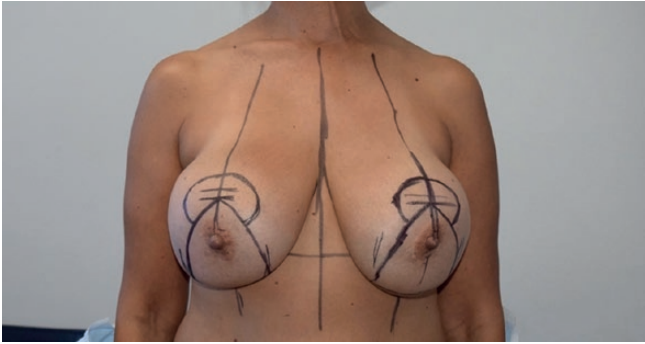


Figure 1. A 58-year-old female patient with a 17-year history of bilateral subglandular breast augmentation, saline implants, size unknown. Preoperative open pattern marking.

operation. This paper details a safe technique for simultaneous explantation and mastopexy with a novel open marking pattern and vertical bipedicle, which can restore breast cosmesis following implant removal.

OPERATIVE TECHNIQUE

Inclusion Criteria

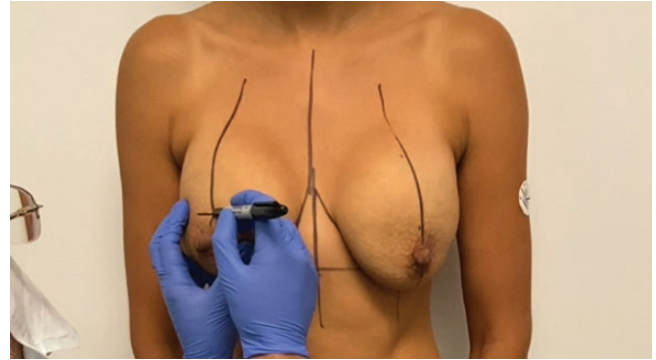
This study was approved by the Providence St. Joseph's Health Institutional Review Board. A consecutive series of all patients who underwent simultaneous breast implant removal and mastopexy between November 2018 and November 2019 were included in this retrospective study. All patients underwent total or en bloc capsulectomy and implant removal. Patients were deemed to be acceptable candidates for simultaneous breast implant removal and mastopexy if they had preoperative ptosis or skin excess, or it was anticipated that there would be unacceptable skin excess or ptosis after the implant was removed. History of previous mastopexy (or mastopexies), thin skin, subglandular implants, capsular contracture, and limited breast parenchyma did not disqualify patients from being offered this procedure.

Exclusion Criteria

Patients with any amount of nicotine intake were told to stop smoking for 3 months and were not offered this procedure.

Markings

Markings are performed in the standing position. First, standard breast measurements including chest midline, inframammary fold, and breast meridian are made. Next, nipple position is determined with a vertical displacement technique to anticipate where the nipple should be located after the implants are removed. Medial and lateral displacement is used to mark the borders of the vertical limbs, which will become the borders



Video 1. Watch now at <https://academic.oup.com/asjopenforum/article-lookup/doi/10.1093/asjof/ojab001>

of the vertical bipedicle. A pinch test is used to confirm that the skin can be closed without undue tension. The new nipple position is then connected to the borders of the vertical limbs by gradually tapering lines that connect to the vertical limb markings. These lines are extended parallel to each other and continue to the inframammary fold. They do not converge at the inferior aspect or diverge at the planned T-junction. The length of the final vertical limb can be tentatively marked, but this will change significantly when the implants are removed. The borders of the areola are then marked, approximately, 1 to 1.5 cm longer than the desired size. The areola marking is typically around 7×5 cm, which will become a $3\text{--}4 \times 3\text{--}4$ cm final areola size.

Video 1 demonstrates the open pattern marking technique, and **Figure 1** illustrates the complete open pattern markings.

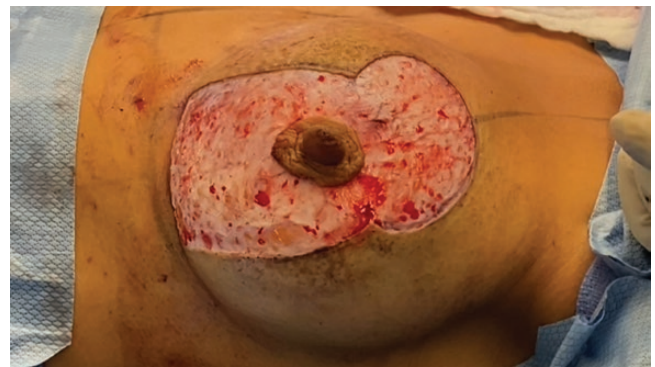
Technical Considerations

After the induction of anesthesia and prepping and draping in the usual sterile fashion, the areola marker is used to mark the areola border. Tumescence solution is injected into the pedicle and planned incisions. First, the incisions are made with the 10 blade, and then the pedicle is de-epithelialized with the 10 blade. Next, dissection proceeds with the electrocautery along the medial border of the pedicle and lateral border of the pedicle to the implant capsule. A capsulectomy is performed as desired and the implant is removed. The breasts are towel clipped closed, and the patient is sat up to evaluate the result and plan adjustments.

After obtaining hemostasis and irrigating with antibiotic irrigation, an additional local anesthetic is injected and closure begins by first tacking the superior border of the areola to its new position with 3-0 Monocryl suture (Ethicon Inc., Bridgewater, NJ). The pedicle is then inspected. It should rest almost vertically and not drift laterally toward the axilla. If there is redundancy, the pedicle is plicated with 2-0 Vicryl suture (Ethicon Inc., Bridgewater, NJ) at its base to take up the excess and is then stabilized medially



Figure 2. Intraoperative photograph: example of a breast after implant removal and capsulectomy.



Video 2. Watch now at <https://academic.oup.com/asjopenforum/article-lookup/doi/10.1093/asjof/ojab001>

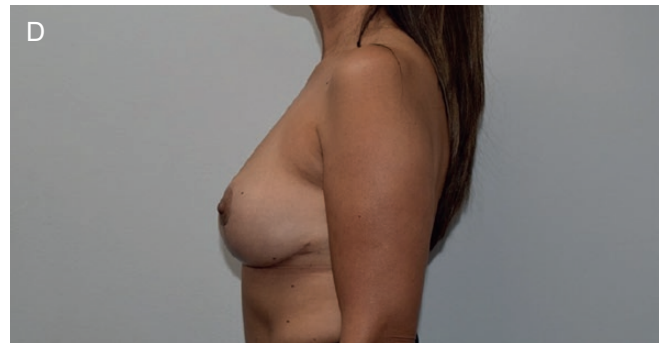
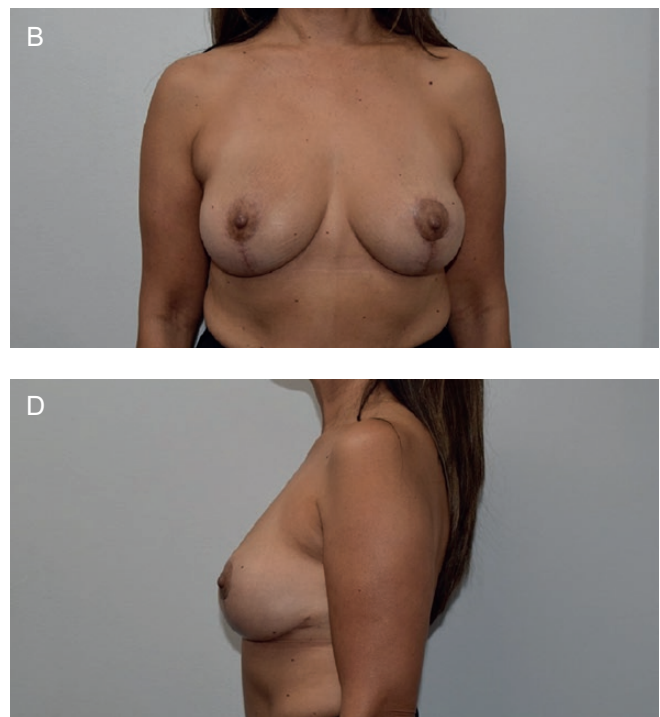
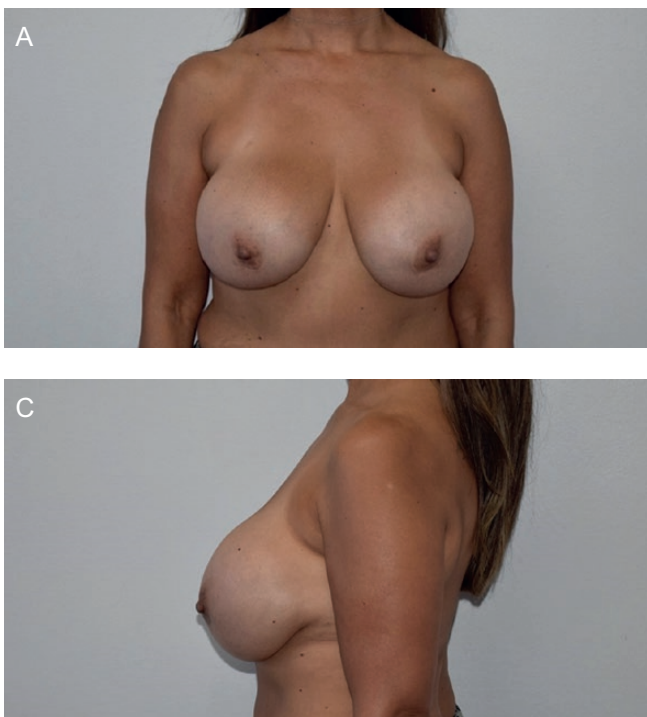


Figure 3. The same 58-year-old female patient as in Figure 1. (A) Preoperative anterior posterior (AP) view, (B) 14 month-postoperative AP view, (C) Preoperative lateral view, and (D) 14 months postoperative lateral view.

with 2-0 Vicryl suture at the inferior medial point. The vertical limb length is then determined with towel clips. Additional tissue may be trimmed from the vertical limbs to increase tension as necessary. The bases of the vertical limbs are then transposed over the lower border of the pedicle and join at the inframammary fold. This creates the T-junction, which is secured with a 3-way stitch using 3-0 Monocryl suture. The medial and lateral pillars are closed with 2-0 Vicryl suture, and the skin of the vertical limb is closed with 3-0 Monocryl suture. Medial and lateral dog ears marked bilaterally. The lower incision for the medial dog-ear excision should be made 0.5 to 1 cm above the marked inframammary fold to ensure a gentle

superior curve to this incision. It is important to bevel the upper edge of the medial dog-ear excision in the cephalad direction through the breast tissue in order to reduce medial fullness and a “boxy” medial appearance of the breast. Finally, a 15 French Blake drain (Johnson & Johnson, New Brunswick, NJ) is inserted laterally into each breast and is secured with 2-0 Nylon suture (Ethicon Inc., Bridgewater, NJ), and then the skin is closed with 3-0 Monocryl suture and 4-0 Monocryl suture.

Video 2 demonstrates the surgical technique, and **Figure 3A-D** show preoperative views and postoperative views at 14 months postoperatively.

Figure 4 shows the critical steps of the operation.

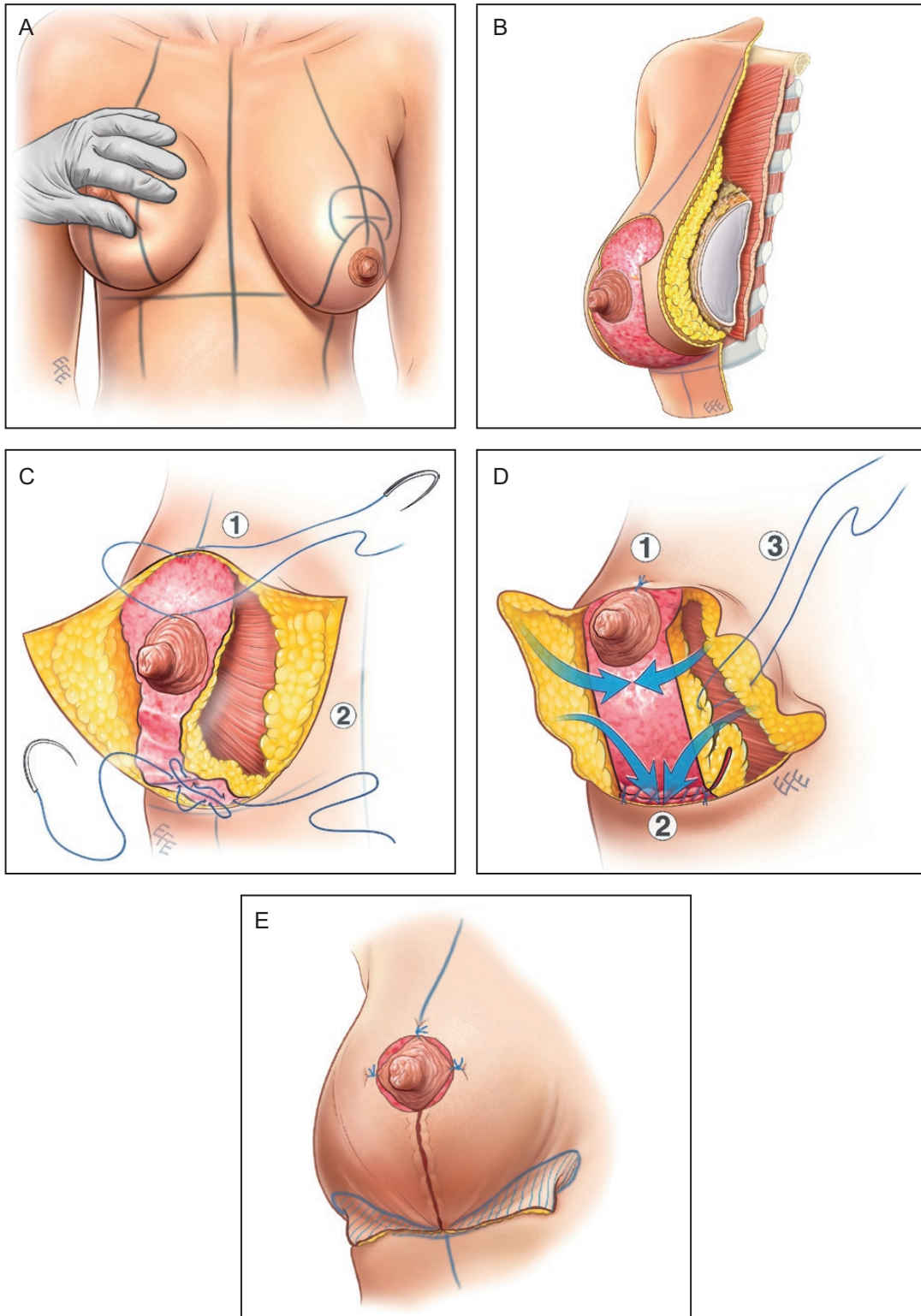


Figure 4. Critical steps of the operation: (A) markings, (B) pedicle after de-epithelization, (C) advancing nipple-areola complex (NAC) superiorly and plicating the pedicle inferiorly, (D) closing the medial and lateral flaps, and (E) marking dog ears for excision.

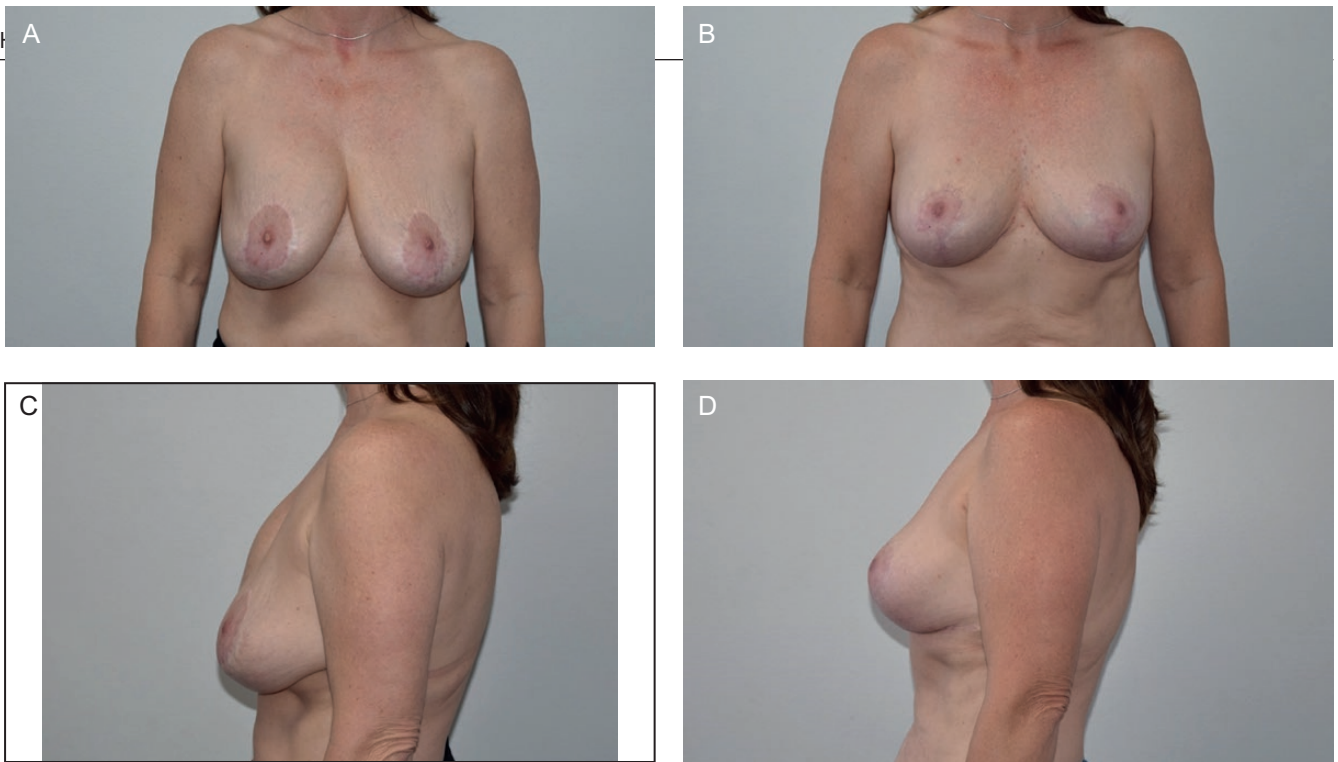


Figure 5. A 48-year-old female patient with a 21-year history of bilateral subpectoral breast augmentation with saline implants (size unknown), followed by a revision with mastopexy approximately 1 year after the initial operation. She developed a left side rupture. (A) Preoperative AP view, (B) 5 months postoperative AP view, (C) Preoperative lateral view, and (D) 5 months postoperative lateral view.

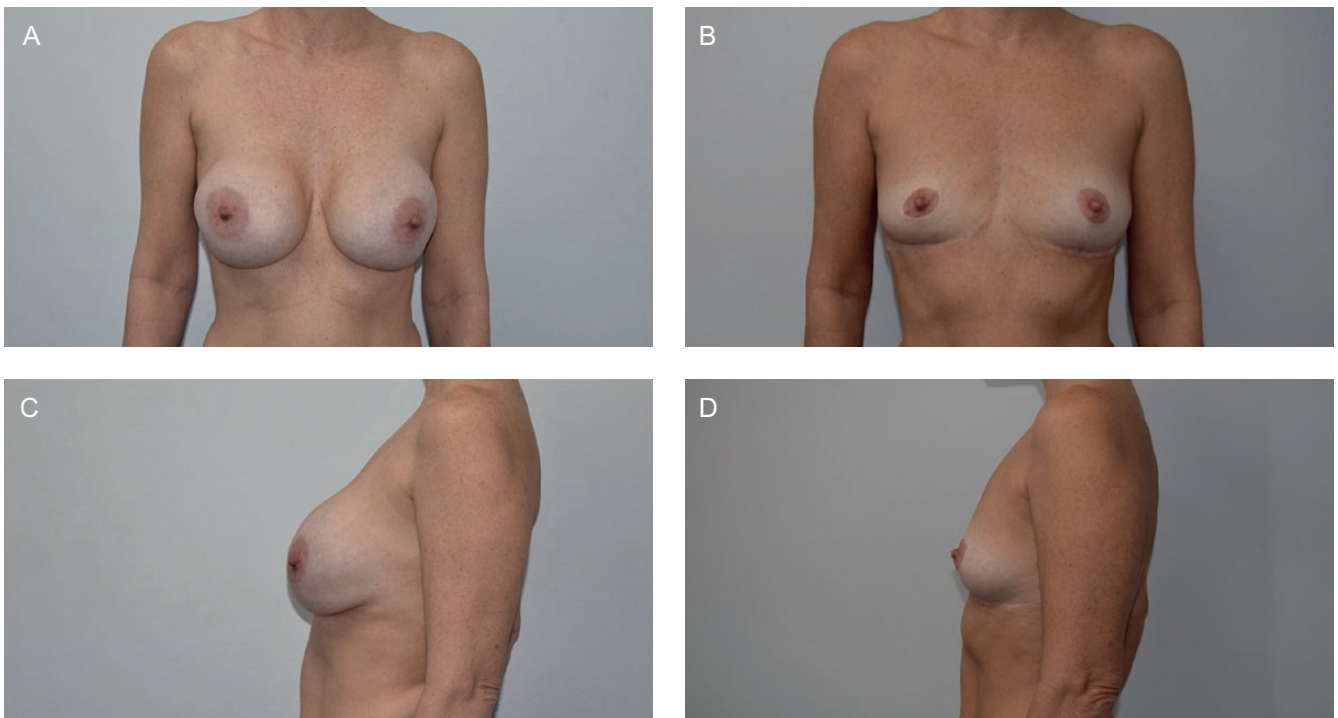


Figure 6. A 46-year-old female patient with a 21-year history of bilateral subglandular 450 mL saline implants. She developed a Baker class III capsular contracture. (A) Preoperative AP view, (B) 19 months postoperative AP view, (C) Preoperative lateral view, and (D) 19 months postoperative lateral view.

RESULTS

This procedure was performed on a consecutive series of 86 patients from November 2018 to November 2019. Patient's ages ranged from 29 to 65 years, with a mean of 49 years. The average follow-up time was 10.2 months, and the range was 3 to 20 months. There were no incidences of partial or total nipple-areola complex necrosis. Additional results will be presented in an upcoming study.

Figures 5 and 6 show the examples of preoperative and postoperative photographs of patients who underwent this technique.

DISCUSSION

When a breast implant is removed, the main change that occurs in the skin envelope is a vertical shortening. The inframammary fold, which is forced inferiorly by a large implant, will often move superiorly and as the vertical limb length shortens and the lower pole contracts. However, the degree to which these changes occur is unpredictable. Consequently, any mastopexy marking must allow significant intraoperative flexibility in this dimension. One common marking pattern, the Wise pattern, is inadequate because it predetermines vertical limb length and separation distance. Another common pattern, the vertical pattern, gives more flexibility for intraoperative adjustments but is used with a superior or superior medial pedicle, which can create vascular issues. However, unlike the vertical pattern or the Wise pattern, the open pattern described in this manuscript predetermines only the pedicle width and relative nipple position. Although it is recommended to use the open pattern with a vertical bipedicle, it can also be used with any type of pedicle. Because the pedicle border markings extend to the inframammary fold in a parallel fashion, vertical limb length and separation distance can be adjusted intraoperatively. In cases where the nipple-areola complex marking was made too high, the vertical limb length can be shortened to move the complex inferiorly. In cases where the nipple-areola complex marking was made too low, additional skin can be trimmed from the superior portion of the pedicle to move the complex superiorly, and the vertical limb length can be extended. This additional flexibility is critical to adequately reconstruct the breast.

In patients who have had previous breast procedures, blood flow to the nipple-areola complex can be tenuous. The existing implants can be subglandular, with previous division of perforators from the pectoralis. The implants can be a dual plane or submuscular, with variable amounts of glandular undermining and pectoralis

retraction. A variety of mastopexies could have been performed with any type of pedicle utilized. It is extremely difficult to know (with any certainty) how the nipple-areola is being perfused before implant removal and mastopexy, and, subsequently, some authors have suggested staging explantation and mastopexy based on the degree of ptosis.^{8,9} However, in order to perform a mastopexy, some type of pedicle must be selected. A vertical bipedicle provides maximal blood flow, regardless of what procedures were performed previously, and allows mastopexy explantation to be safely performed in one stage as there were no nipple-areola complex perfusion issues in this series.

From a cosmetic standpoint, it is important to manage expectations. Virtually, all patients who undergo breast implant removal and mastopexy will experience a loss of upper pole fullness that cannot be replaced without an implant. Auto-augmentation can help shape the lower pole and replace projection to a limited degree¹⁰ but can be risky in terms of not only nipple-areola complex perfusion but also inferior glandular flap perfusion in the setting of a previous mastectomy scar. As an alternative, the technique in this study suggests plicating the pedicle. This plication will not only take up the lower pole redundancy and reorient the breast parenchyma into the center of the breast to minimize lateral fullness but also layer the breast tissue over itself in a similar fashion to auto-augmentation, but without the risk of a loss of perfusion. The plication can be performed along both the supra- and infra-areolar regions of the pedicle to add fullness where necessary and facilitate the inset of the areola.

Care must be taken when performing this procedure in women who have a large amount of glandular tissue. In these patients, because the pedicle tends to be bulky, it can be compressed when the medial and lateral pillars are closed. It may be necessary to trim the pedicle or remove some of the glandular tissue so that the pedicle is not overly compressed. Additionally, in the same type of patient, the plication should be performed conservatively or avoided. Because of the compression of the pedicle by large amounts of glandular tissue, a tight plication can restrict nipple-areolar complex vertical movement and cause tethering.

CONCLUSIONS

In summary, this paper presents a safe and reliable technique for simultaneous mastopexy explantation with a novel open marking pattern. In general, cosmetic results are very good and patient satisfaction is high. A forthcoming study will include a detailed analysis of the results.

Disclosures

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